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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,480	09/27/2001	Kaoru Awaka	TI-33253 (032350.B345)	8718
23494	7590	05/19/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			DO, CHAT C	
			ART UNIT	PAPER NUMBER

2193

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/963,480

Applicant(s)

AWAKA ET AL.

Examiner

Chat C. Do

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,9,10,12 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,9,10,12 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to Amendment filed 12/27/2004.
2. Claims 1, 3, 9-10, 12, and 18-20 are pending in this application. Claims 1, 10, and 19-20 are independent claims. In Amendment, claims 1, 3, 10, 12, and 20 are amended; claims 2, 4-8, 11, and 13-17 are cancelled. This Office action is made final.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1, 3, 9-10, 12, and 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 1, the limitation "a critical path" is unclear whether that critical path is referring back to the at least one critical path in lines 17-18 or it is a new critical path. For examination purposes, the examiner considers the critical path as at least one critical path in lines 17-18. In addition, the limitation "a critical path being....multiply-accumulate core" is so unclear because the cited critical path is greater than or equal to a predetermined amount of time wherein the predetermined amount of time is less than a longest amount of time that it takes any other electrical signal to travel from input of multiply-accumulate core to output of multiply-accumulate core, then mathematically the cited critical path either be larger or smaller than the amount of time that it takes any

other electrical signal o travel from input of multiply-accumulate core to output of multiply-accumulate core (e.g. $t_c \geq t_p$ wherein $t_p < t_{max}$ than $t_c >$ or $< t_{max}$). For examination purposes, the examiner considers the amount time of the critical path can be either larger or smaller than the longest path. Claims 10 and 19-20 have the same rejection.

Thus, claims 3, 9, 12, and 18 are also rejected for being dependent upon the rejected base claims 1 and 10 respectively.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 9-10, 12, and 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Hansen et al. (U.S. 2003/0110197 A1).

Re claim 1, Hansen et al. disclose in Figure 2 a multiply-accumulate module (e.g. Figure 2 with 212 ACC as accumulator) comprising: a multiply-accumulate core (e.g. Figure 2), wherein multiply-accumulate core (e.g. Figure 2) comprises: a plurality of Booth encoder cells (e.g. Figure 3 and page 3 right column paragraph 0043); a plurality of Booth decoder (e.g. 201 Figure 2) cells connected to at least encoder cells (e.g. 303 in Figure 3), plurality of Booth decoder cells including at least one first Booth decoder cell

and at least one of Booth decoder cell, at least one first Booth decoder cell structurally the same as at least one second Booth decoder cells (e.g. page 3 right column paragraph 0042); plurality of Wallace tree cells (e.g. paragraph 0059 and 202-211 in Figure 2) one of Booth decoder cells, connected to at least plurality of Wallace tree cells including at least one first Wallace tree cell and at least one second Wallace tree cell, at least one first Wallace tree cell structurally the same as at least one second Wallace tree cell (e.g. 204 and 207 in Figure 2); wherein multiply-accumulate module includes at least one critical path (e.g. any path in Figure 2 would be a critical path as reason under 112 rejection above), a critical path being an electrical path for which an amount of time that it takes for an electrical signal travel from an input of multiply-accumulate core to an output of multiply-accumulate core is greater than or equal to a predetermined amount of time, wherein predetermined amount of time is less than a longest amount of time that it takes any other electrical signal to travel from input multiply-accumulate core to output of multiply-accumulate core (e.g. $t_c \geq t_p$ wherein $t_p < t_{max}$ than $t_c >$ or $< t_{max}$ the amount time of the critical path can be either larger or smaller than the longest path); wherein at least one first Wallace tree cell or at least one first Booth decoder cell are disposed on at least one critical path (e.g. the critical path running through 4-2 add in Figure 2); wherein at least one second Wallace tree cell and at least one second Booth decoder cell are not disposed on any of at least one critical path (e.g. the mux would route through at least one Wallace cell); wherein at least one first Wallace tree or at least one first Booth decoder cell comprises a first plurality of transistors, and at least one second Wallace tree cell or at least one second Booth decoder cell comprises second plurality of transistors (e.g.

inherently these Wallace cells are structured with transistors as logic gates for forming an adder as an example), a width of at least one of first plurality of transistors is greater than width of a corresponding one of second plurality transistors (e.g. it is impossible to manufacture all transistors with exact same width).

Re claim 9, Hansen et al. further disclose in Figure 2 at least one second cell is a most significant bit or a least significant bit and at least one first cell is not a most significant bit or a least significant bit (e.g. Figure 3).

Re claim 10, it is a parallel multiplier with limitations cited in claim 1. Thus, claim 10 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 12, it is a parallel multiplier with limitations cited in claim 3. Thus, claim 12 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 18, it is a parallel multiplier with limitations cited in claim 9. Thus, claim 18 is also rejected under the same rationale as cited in the rejection of rejected claim 9.

Re claim 19, it is a method claim of claim 1. Thus, claim 19 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 20, it is a method claim of claim 10. Thus, claim 20 is also rejected under the same rationale as cited in the rejection of rejected claim 10.

Allowable Subject Matter

7. Claim 3 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 3, 9-10, 12, and 18-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on 7:00AM to 5:00PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C Do
Examiner
Art Unit 2193

May 5, 2005

A handwritten signature in black ink, appearing to read 'TODD INGBERG', with a long, sweeping line extending from the end of the signature towards the top right of the page.

TODD INGBERG
PRIMARY EXAMINER

In the Drawings

Please add Figures 5 and 6 per attached sheet.

OK to enter

CD

04/14/05



TI-33253

S/N: 09/963,480
REPLACEMENT SHEET/
FORMAL DRAWINGS

4/4

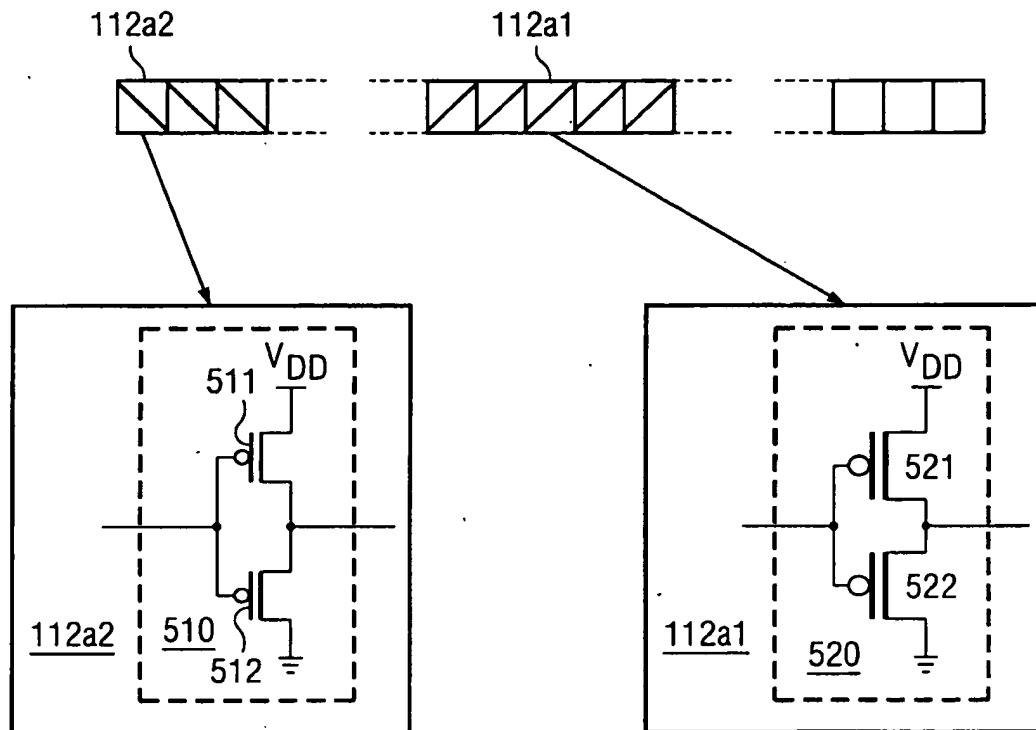


FIG. 5

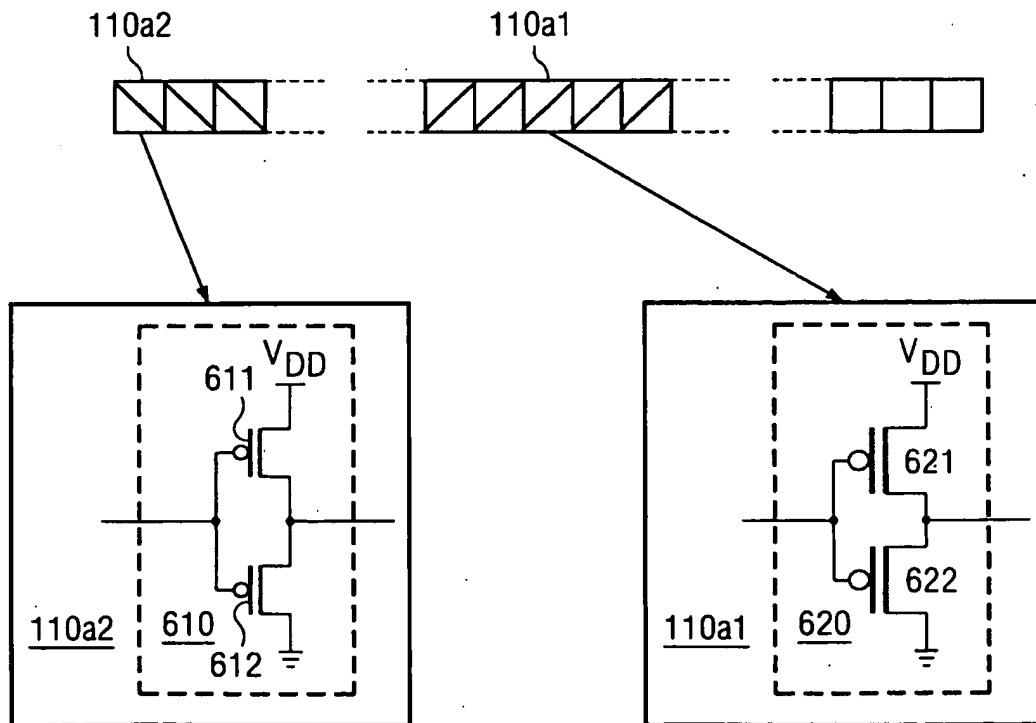


FIG. 6